REMARKS

In the Advisory Action of January 4, 2007, the Examiner refused to enter Applicant's Amendment of November 22, 2006, because (i) the Amendment did not specify that claims 19-20 were canceled and (ii) the Examiner determined that the proposed Amendment would not place the application in better form for appeal. As for the first reason (i) to refuse to enter the Amendment, Applicant has resubmitted the Amendment of November 22, 2006 above, but with clarification that claims 19-20 have been canceled. In addition, claims 9, 16-17 and 22 have been canceled as well. Therefore, the Amendment is now Compliant with the rules regarding cancellation of claims. Applicant respectfully requests reconsideration of the refusal to enter Applicants' Amendment for the second reason (ii). The Amendment canceled six claims, and corrected two 35 USC 112, second paragraph informalities, involving the articles "a" and "the". This certainly reduced the issues for Appeal (because there are now fewer claims to consider and two informalities have been corrected) and did not raise any new issues or require any additional searching (because there were no substantive changes to the claims).

The Examiner also refused to enter Applicant's (supplemental) Rule 131 Affidavit submitted on November 22, 2006. Applicant submitted an (original) Rule 131 Affidavit on June 21, 2006 in response to the first (non Final) Office Action of May 8, 2006. This (original) Affidavit included Applicant's Invention Disclosure of May 7, 2003 which proved conception of the invention and stated that Application had implemented the invention by the time of submission of the Invention Disclosure. See Response to Question #2 in this (original) Affidavit. This (original) Affidavit also included copies of Applicant's source code labeled "res.c" and "rescl.c" and "dir.list.txt". The res.c program was implemented at the client computer to request the power reset of the remote server. The rescl.c program was implemented at the remote server to pin memory for the power reset function, wait for the request for power reset and then initiate the power reset of the remote server. The directory shows the last dates of update of "res.c" source code and "rescl.c" source code, to be in March 2003. As indicated by the (original) Rule 131 Affidavit (including the source code and directory listings) and Applicants' Invention Disclosure submitted on May 7, 2003, Applicant conceived and reduced to practice his invention,

as currently claimed, by March 2003 which is before the filing date of Guaracci et al. In this (original) Affidavit, Applicant also swore the following under oath, "I conceived and reduced to practice the invention as claimed by March 2003. This is evidenced by disclosure END8-2003-0065 submitted by me on May 7, 2003." The Invention Disclosure describes the Invention in understandable natural (i.e. English) language. The **source** code listings are human readable, and are an acceptable form of documentation for those of ordinary skill in the art, i.e. computer programmers. That is the general standard for patent applications. Note that the source code was not very long, so it would be easy to understand by a computer programmer. Therefore, Applicant met its burden to swear back of Guaracci et al. with the (original) Affidavit under Rule 131 (a) and (b) submitted prior to Final Rejection. Because the (original) Affidavit was submitted prior to Final Rejection (and in Applicant's first response after citation of Guaracci et al.), Applicant was not required to provide any justification for submission of the (original) Affidavit and this (original) Affidavit was clearly timely.

The Examiner argues that the (original) Affidavit did not meet the requirements of MPEP 2138.04 because the source code was not readily understandable to someone without ordinary skill in the art. Firstly, MPEP 2138.04 pertains to conception of the invention, not reduction to practice, and conception of the invention was sufficiently demonstrated by the Invention Disclosure in understandable natural (i.e. English) language. Conception and reduction to practice were also demonstrated unequivocally by the source code. **MPEP 2138.04 pertains to the technical sufficiency of the disclosure insofar as how much it teaches**, not whether it is written in a natural language versus source code. Also, note that the precedent cited in MPEP 2138.04 states "Conception is established when the invention is made sufficiently clear to enable **one skilled in the art** to reduce it to practice without the exercise of extensive experimentation or the exercise of inventive skill. ... Conception has also been defined as a disclosure of an invention which enables **one skilled in the art** to reduce the invention to a practical form without exercise of inventive faculty." Therefore, the standard is whether the source code listings would enable one skilled in the art to reduce the invention to practice. Clearly, a source code listing could easily be understood by a computer programmer of ordinary skill in the art. Computer programmers are trained in source code. Moreover, the source code need only be

compiled to be operational, and a technician will less than ordinary computer programming skill could simply feed the source code into a compiler and load the object code into a computer to execute.

When the Examiner informed Applicant that the Examiner could not understand the source code, **as a convenience and service to the Examiner**, Applicant provided the (supplemental) Affidavit of November 22, 2006 with annotation/comments to the same source as previously submitted in the (original) Affidavit of June 21, 2006 to facilitate the understanding of the source code. The (supplemental) Affidavit is enclosed again herein; however, the annotated source code listings are included herein with the annotations in color to standout. (The annotations would have been apparent even in black and white as submitted with the (supplemental) Affidavit of November 22, 2006 by comparison to the source code submitted with the (original) Affidavit of June 21, 2006, and by the explanation provided in the Remarks section of the Amendment, reproduced below.)

As explained in the (supplemental) Affidavit of November 22, 2006, Applicant enclosed copies of the "res.c" source code and "rescl.c" source code with Applicant's added comments (in blue) next to key lines of the source codes to explain their meaning. Applicant also enclosed another Affidavit swearing that Applicant's added comments are accurate. Note the last eight lines of the rescl.c source code, beginning with "if (getsockname ...", which implements the pinning of the power reset program to memory, and the looping of the power reset program to listen for a call to initiate the power reset program. Note also the ninth line from the end of the source code where the socket is bound to the TCP port to listen for a TCP/IP request packet to perform power reset, as recited in claim 2 and elsewhere. Note also the step "reboot (RB_SOFTIPL)", in about the middle of the source code, that is a system call to reboot as recited in claim 7. In the res.c source code, note the step "rc=connect ..." about in the middle of the source code, by which another computer establishes a TCP socket connection with the remote computer which includes the power reset program. Also, note the step "fpringf(stderr, "attempt to reboot/n" six lines from the end, which establishes the request to reboot to be sent to the remote computer. Therefore, Applicant has established conception and actual reduction to

practice of the invention, as currently claimed, prior to the effective date of Guaracci et al. Consequently, Guaracci et al. are not an effective reference against the present patent application.

Substantive Difference Between Present Invention and Guarraci et al.

The claims were rejected under 35 USC 102 based on Guarraci et al. Applicants respectfully traverse this rejection based on the following.

It appears that the Examiner has misinterpreted the step in claim 1 of "pinning a power reset procedure to memory at a remote server". The Examiner appears to think that "pinning' means to cycle the process which waits for a power reset request to be received. That is not the proper interpretation of the pinning step recited in claim 1. "Pinning" is defined in the Background section of the present patent application as follows:

> "Pinning generally refers to an ability for pages to remain in main memory and not have to be swapped out, typically by a computer operating system. This enables memory pages to be maintained in real memory all the time. However, if a program/process is not pinned to memory (normally it is not), the program/process competes for memory resources with other programs. However, as soon as a new resource is required, e.g., memory, the program will fail." Page 3 lines 7-12.

Thus, "pinning" a program to memory means that the program will maintain a place in memory to execute, and not be swapped out to storage, even though memory is in short supply, and another program may need it.

Guaracci et al. fail to disclose this key feature of the present invention, i.e. pinning a power reset procedure to memory at a remote server. This enables the power reset procedure to be functional despite a shortage of memory at the remote server that causes other critical functions to fail. This pinning allows power reset of the remote computer to correct problems with the remote computer, when there is insufficient memory at the remote computer for all

programs to run. Guaracci et al. are concerned with something different, i.e. the communication channel between the controlling computer and the remote computers - remotely monitoring computer systems over an out-of-band communication channel when the in-band communication channel is unavailable. Therefore, even if Guaracci et al. were to predate the present invention, the rejection under 35 USC 102 should be withdrawn. Moreover, Guaracci et al. fail to teach or even suggest the present invention, so a rejection under 35 USC 103 would be equally unfounded.

The Examiner cites Paragraph 0035 of Guaracci et al., "UPS 120 may provide basic remote management capabilities, such as the ability to cycle power or reset headless server 110". As explained above, this "ability to cycle power or reset headless server 110" is substantially different than the first step in claim 1.

Substantive Difference Between Present Invention and Gomi et al.

In the Advisory Action, the Examiner also cited a new reference, US 6,301,634 to Gomi et al. While Applicant welcomes new prior art searching by the Examiner at any stage in prosecution, the Examiner should give Applicant an opportunity to respond to it. Moreover, this should have been a non Final Action, because Applicant did not make any amendment to the claims to require a new search. Applicant respectfully traverses this rejection based on the following:

Gomi et al. attempt to keep an application from being swapped-out of memory, because the Application is needed to respond in real time, and the reloading time would prevent a real time response by the Application. However, Gomi et al. do not teach "pinning" as recited in claim 1. Rather, Gomi et al. teach a swap-out prevention unit 90 which periodically invokes the Application for dummy operation. "The swap-out prevention unit 90 starts the application program on a periodic basis so that the application program will not be swapped out." See Column 12 line 41 to Column 13 line 16. Presumably, the swap-out algorithm in Gomi et al. is based on how long an application has not been used, so the periodic invocation of the

Application by the swap-out prevention unit, even for dummy operation, convinces the swap-out algorithm not to swap-out the Application because there are least recently used applications to swap-out instead. The swap-out prevention unit of Gomi et al. does not supersede the swap-out algorithm, but instead makes the Application more recently used than other swap-out candidates. In contrast, claim 1 of the present patent application recites "pinning" which means that the program will maintain some place in memory to execute, and not be swapped out to storage, even though the memory is in short supply, and another program may need it. "Pinning" is a reservation for memory space (although not necessarily the same location in memory) and supersedes the normal swap-out algorithm. For example, if the restart program function is "pinned" to memory as recited in claim 1, a more recently used application will be swapped-out to storage when memory is in short supply instead of swapping-out the less recently used restart program function. Therefore, Gomi et al. do not teach or suggest the present invention. The other independent claims of the present invention similarly distinguish over Gomi et al.

Applicant also encloses a Notice of Appeal, and will proceed with the Appeal regardless of whether the (supplemental) Affidavit of November 22, 2006 is entered. However, it would be helpful to the Board and simplify the issues on Appeal to enter the (supplemental) Affidavit of November 22, 2006 with the annotation/comments to the source code.

Based on the foregoing, the present patent application should be allowed.

Respectfully submitted,

Dated: January 15, 2007

Telephone: 607-429-4368
Fax No.: 607-429-4119

Arthur J. Samodovitz
Reg. No. 31,297

Practitioner's Docket No. END920030054US1 **PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Vyacheslav Barsuk

Application No.: 10 / 736,429 Group No.: 2116
Filed: 12/15/2003 Examiner: Michael J. Brown
For: METHOD, APPARATUS AND PROGRAM STORAGE DEVICE FOR PROVIDING REMOTE POWER RESET AT A REMOTE SERVER THROUGH A NETWORK CONNECTION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF PRIOR INVENTION IN THE UNITED STATES OR IN A NAFTA OR WTO MEMBER COUNTRY TO OVERCOME CITED PATENT OR PUBLICATION (37 C.F.R. § 1.131)

NOTE: 37 C.F.R. § 1.131 Affidavit or declaration of prior invention.

(a) When any claim of an application or a patent under reexamination is rejected, the inventor of the subject matter of the rejected claim, the owner of the patent under reexamination, or the party qualified under §§ 1.42, 1.43, or 1.47, may submit an appropriate oath or declaration to establish invention of the subject matter of the rejected claim prior to the effective date of the reference or activity on which the rejection is based. The effective date of a U.S. patent, U.S. patent application publication, or international application publication under PCT Article 21(2) is the earlier of its publication date or date that it is effective as a reference under 35 U.S.C. 102(e). Prior invention may not be established under this section in any country other than the United States, a NAFTA country, or a WTO member country. Prior invention may not be established under this section before December 8, 1993, in a NAFTA country other than the United States, or before January 1, 1996, in a WTO member country other than a NAFTA country. Prior invention may not be established under this section if either:

CERTIFICATION UNDER 37 C.F.R. §§ 1.8(a) and 1.10*
(When using Express Mail, the Express Mail label number is mandatory; Express Mail certification is optional.)

I hereby certify that, on the date shown below, this correspondence is being:

MAILING

☐ deposited with the United States Postal Service in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

37 C.F.R. § 1.8(a)

☒ with sufficient postage as first class mail.

37 C.F.R. § 1.10 *

☐ as "Express Mail Post Office to Addressee"
Mailing Label No. _____ (mandatory)

TRANSMISSION

☐ facsimile transmitted to the Patent and Trademark Office, (571) 273-8300.

Signature

Date: 11/20/06

Georgia Y. Brundege
(type or print name of person certifying)

** Only the date of filing (§ 1.6) will be the date used in a patent term adjustment calculation, although the date on any certificate of mailing or transmission under § 1.8 continues to be taken into account in determining timeliness. See § 1.703(f). Consider "Express Mail Post Office to Addressee" (§ 1.10) or facsimile transmission (§ 1.6(d)) for the reply to be accorded the earliest possible filing date for patent term adjustment calculations.*

(1) The rejection is based upon a U.S. patent or U.S. patent application publication of a pending or patented application to another or others which claims the same patentable invention as defined in § 1.601(n); or

(2) The rejection is based upon a statutory bar.

PURPOSE OF DECLARATION

1. This declaration is to establish completion of the invention of this application in

☒ the United States

☐ the NAFTA country _____ *(name of country)*

☐ the WIPO country _____ *(name of country)*

at a date prior to June 30, 2003, that is the effective date of the prior art

☐ publication _____

☐ patent _____

☒ patent publication US 2004/0267918 A1

☐ other _____

that was cited by the

☒ examiner.

☐ applicant.

NOTE: 37 C.F.R. § 1.131 is not applicable to a rejection based on a U.S. patent that CLAIMS the rejected invention.

2. The person making this declaration is (are):

☒ the inventor(s).

☐ only some of the joint inventor(s) *(and a suitable excuse is attached for failure of the omitted joint inventor(s) to sign)*

☐ the party in interest *(and a suitable explanation as why it is not possible to produce the declaration of the inventor(s) is attached)*

FACTS AND DOCUMENTARY EVIDENCE

NOTE: "The showing of facts shall be such, in character and weight, as to establish reduction to practice prior to the effective date of the reference, or conception of the invention prior to the effective date of the reference coupled with due diligence from prior to said date to a subsequent reduction to practice or to the filing of the application. Original exhibits of drawings or records, or photocopies thereof, must accompany and form part of the affidavit or declaration or their absence satisfactorily explained." 37 C.F.R. § 1.131(b).

"I conceived and reduced to practice the invention, as currently claimed, by March 2003. This is evidenced by invention disclosure END8-2003-0065 submitted by me on May 7, 2003, the source code lising for "res.c" (implemented at a calling computer), the source code listing for "rescl.c" (implemented at the remote computer which is called by the calling computer), and the dir_list.txt directory (which indicates last date of update of "res.c" and "rescl.c" source code programs). I recently added comments to the res.c and rescl.c source code for explanatory purposes, and these comments accurately reflect the function of the respectively steps in the source code."

3. To establish the date of completion of the invention of this application, the following attached documents and/or models are submitted as evidence:

(check all applicable items below)

- ☐ sketches
- ☐ blueprints
- ☐ photographs
- ☐ reproduction(s) of notebook entries
- ☐ model
- ☐ supporting statement(s) by witness(es) (where verbal disclosures are the evidence relied upon)
- ☐ interference testimony `rescl.c (source code)`
- ☒ disclosure documents- `dir list.txt (directory)` `Disclosure END8-2003-0065` `resc.c (source code)`

NOTE: While conception is the mental part of the inventive act, it must be capable of proof, such as by demonstrative evidence or by a complete disclosure to another. Conception is more than a vague idea of how to solve a problem. The requisite means themselves and their interaction must also be comprehended. See Mergenthaler v. Scudder 1897 C.D. 724, 81 O.G. 1417." See also M.P.E.P. § 715.07 and § 2138.04, 7th ed.

4. From these documents and/or models, it can be seen that the invention in this application was made

- ☐ on _____
- ☒ at least by the date of `March 31, 2003`, which is a date earlier than the effective date of the reference.

NOTE: "If the dates of the exhibits have been removed or blocked off, the matter of dates can be taken care of in the body of the oath or declaration." M.P.E.P. § 715.07, 8th ed.

NOTE: "[T]he dates in the oath or declaration may be the actual dates, or, if the applicant or patent owner does not desire to disclose his or her actual dates, he or she may merely allege that the acts referred to occurred prior to a specified date. However, the actual dates of acts relied on to establish diligence must be provided." M.P.E.P. § 715.07, 8th ed.

DILIGENCE

NOTE: "Where there has not been reduction to practice prior to the date of the reference, the applicant or patent owner must also show diligence in the completion of his or her invention from a time just prior to the date of the reference continuously up to the date of the actual reduction to practice or up to the date of filing his or her application (filing constitutes a constructive reduction to practice, § 1.131)." M.P.E.P. § 715.07, 8th ed..

NOTE: "A conception of an invention, though evidenced by disclosure, drawings, and even a model, is not a complete invention under the patent laws, and confers no rights on an inventor, and has no effect on a subsequently granted patent to another, UNLESS HE OR SHE FOLLOWS IT WITH REASONABLE DILIGENCE BY SOME OTHER ACT, such as an actual reduction to practice or filing an application for a patent. Automatic Weighing Mach. Co. v. Pneumatic Scale Corp., Limited 1909 C.D. 498, 139 O.G. 991, M.P.E.P. § 715.07, 8th ed.

"Conception in the mental part of the inventive act, but it must be capable of proof, as by drawings, complete disclosure to another person, etc. In Mergenthaler v. Scudder, 1897 C.D. 724, 81 O.G. 1417, it was established that conception is more than a mere vague idea of how to solve a problem; the means themselves and their interaction must be comprehended also." M.P.E.P. § 715.07, 8th ed.

NOTE: "[O]nly diligence before reduction to practice is a material consideration. The 'lapse of time between the completion or reduction to practice of an invention and the filing of an application thereon' is not relevant to an affidavit or declaration under 37 CFR 1.131. See Ex parte Merz, 75 USPQ 296 (Bd. App. 1947)." MPEP § 715.07(a), 8th ed.

5. Attached is a statement establishing the diligence of the applicants, from the time of their conception to a time just prior to the date of the reference, up to the:

☒ actual reduction to practice.

☐ filing of this application.

TIME OF PRESENTATION OF THE DECLARATION

(complete (a), (b) or (c))

(a) ☒ This declaration is submitted prior to final rejection.

(b) ☐ This declaration is submitted with the first response after final rejection, and is for the purpose of overcoming a new ground of rejection or requirement made in the final rejection.

(c) ☐ This declaration is submitted after final rejection. A showing under 37 C.F.R. § 1.116(b) is submitted herewith.

DECLARATION

6. As a person signing below:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURE(S)

7. *(complete A or B below)*

A. Inventor(s)

Full name of sole or first inventor Vyacheslav Borsuk

Inventor's signature

Date 11/16/06 Country of Citizenship Ukraine

Residence 2450 Airport Road, K3103, Longmont , CO 80503

Post Office Address Same as Residence

Full name of second joint inventor, if any

Inventor's signature

Date Country of Citizenship

Residence

Post Office Address

(use added page for signature by additional inventors)

Number of pages added: 0

B. Assignee

(type or print name of person signing)

Signature

Date

P.O. Address

(type name of assignee)

Address of assignee

Title of person authorized to sign on behalf of assignee

Assignment recorded in PTO on

Reel Frame

A "CERTIFICATE UNDER 37 C.F.R. § 3.73(b)" is attached.

```
/* 03/06/03 by Slava Barsuk */ Source code of program in C
programming language. This portion of code implements part of
claim 9  - sending a call to the remote server
/* power reset client code */
/* v1.0.0.0         */

#include  <stdio.h> definition of miscellaneous C headers
#include  <unistd.h>
#include  <sys/ioctl.h>
#include  <sys/types.h>
#include  <sys/socket.h>
#include  <netinet/in.h>
#include  <netdb.h>
#include  <string.h>
#include  <strings.h>


void main(int argc, char *argv[])main body starts here
{
int  sock,rc,NB,len; definition of data structures
struct    sockaddr_in    server;
struct    hostent   *hp, *gethostbyname();
struct    servent   *port;
char hostname[50];
char buf[1024];
char wbuf[256];
int  rbuf[2]={4,12};
actual executable code starts here
     if(getuid()!=0)     exit(); check user id of command issuer.
must be root (superuser), if not, program exits
     if(argc<2) check that there are at least 2 command line
arguments, if not print prompt message about command usage and
exit program
      { fprintf(stderr,"--- Usage:\n\t%s <hostname>
[-r|-h]\n",argv[0]);
          exit(4); }

     len=1024;
     strcpy(hostname,argv[1]); accept destination server ( remote
server) hostname
     port=getservbyname("pwrport",0); resolve tcp communication
port for further communication

     sock=socket(AF_INET,SOCK_STREAM,0); create and initialize
tcp socket structure
     server.sin_family=AF_INET; set socket type
     server.sin_len=sizeof(server);
     hp=gethostbyname(hostname); set destination hostname
     bcopy(hp->h_addr,&server.sin_addr,hp->h_length);
```

```
     server.sin_port=htons(port->s_port); set destination port
     rc=connect(sock,(struct sockaddr *)&server,sizeof(server));
- establish connection with remote machine on tcp socket

     if(rc!=0)  {fprintf(stderr,"--- can't establish connect\n");
exit(4);} check that connection was established successfuly ( rc
should be 0), if not display error message and exit program
     if(strcmp(argv[2],"-r")==0) analyze remote operation request
- "-r" stands for reboot
           {
               fprintf(stderr,"attempt to reboot\n"); display
message that request is for reboot
               rbuf[1]=12; place reboot request code (12) into
buffer
               write(sock, rbuf,8); send message to remote
machine ( write contents of memory reffered as rbuf of size 8
bytes into tcp socket sock) claim 9
           }
      else if(strcmp(argv[2],"-h")==0)if request was not for
reboot "-r", check whether it is for power off(halr) - "-h"
          {
               fprintf(stderr,"attempt to halt\n"); display
message that request is for power off(halt)
               rbuf[1]=13; place power off request code(13) into
buffer
               write(sock, rbuf,8);send message to remote
machine( write contents of memory reffered as rbuf of size 8
bytes into tcp socket sock) - claim 9
          }
     close(sock); close connection on tcp socket
}
```

```
total 360
-rw-r-----   1 root     sys            1274 Feb 13 2003  pwrst.c
-rw-r--r--   1 root     sys            1357 Feb 13 2003  pwrhd.c
-rw-r--r--   1 root     sys            3734 Feb 13 2003  pwrhd
-rw-r-----   1 root     sys            1436 Feb 13 2003  pwron.c
-rwxr-xr-x   1 root     sys            6083 Feb 13 2003  pwron
-rwxr-xr-x   1 root     sys            5883 Feb 13 2003  pwrst
-rwx------   1 root     system          288 Feb 13 2003  pwr_up
-rw-r-----   1 root     sys            1620 Feb 13 2003
pstatus.c
-rwxr-xr-x   1 root     sys            6179 Feb 13 2003  pstatus
-rwx------   1 root     system          274 Feb 13 2003
pwrstatus
-rwx------   1 root     system          972 Mar 03 2003  pwrreset
-rw-r-----   1 root     sys            1290 Mar 06 2003  rescl.c
- source file of reset initiator program
-rwx------   1 root     system         3983 Mar 06 2003  rescl -
compiled file of reset initiator prog.
-rw-r--r--   1 root     sys            1738 Mar 31 2003  res.c
-source file "pinned" program
-rwx------   1 root     system         4305 Mar 31 2003  res
-compiled file "pinned" program
-rw-r--r--   1 root     sys           61440 Oct 14 2003  pwr.tar
-rwxr-xr-x   1 root     system         7910 Oct 06 2005  resclx
-rw-r--r--   1 root     system         1857 Oct 06 2005  resx.c
-rwxr-xr-x   1 root     system        11134 Oct 06 2005  resx
-rw-r-----   1 root     system         1433 Oct 28 2005  resclx.c
-rwxr-xr-x   1 root     system         6536 Oct 28 2005  rr
-rw-r--r--   1 root     system         8000 Oct 28 2005  wc
```

Disclosure END8-2003-0065

Prepared for and/or by an IBM Attorney - IBM Confidential

Created By Vyacheslav Barsuk On 05/07/2003 01:43:12 PM MDT
Last Modified By Enterprise Agentmgr On 10/09/2004 10:34:22 PM EDT
Archived on 10/09/2004

Required fields are marked with the esterisk (*) and must be filled in to complete the form .

*Title of disclosure (in English)
Remote power reset of AIX (UNIX) servers through network connection

Summary

Status	Final Decision (File)
Final deadline	
Final deadline reason	
Docket family	END9-2003-0054
Original location	BLD
* Processing location	Endicott
* Functional area	(Larry Longseth) Global Services-Boulder
Attorney/Patent professional	Arthur Samodovitz/Endicott/IBM
Invention development team (IDT)	Gerri Peper/Boulder/IBM Patrick Wong/San Jose/IBM Donald Schaefer/Boulder/IBM
Submitted date	05/07/2003 04:27:37 PM MDT
* Owning division	GS
* Line of business	INT - IBM Internal Support Primary Inventor's Line of Business (LoB)
Incentive program	
Lab	LONGSETH
* Technology code	674
Patent value tool (PVT) score	57

Inventors with a Blue Pages entry

Inventors: Vyacheslav Barsuk/Boulder/IBM

Inventor Name	Inventor Serial	Div/Dept	Inventor Phone	Manager Name
> Barsuk, Vyacheslav	8A6689	07/U8BJ	347-2303	Kleespies, Thomas (Tom)

> denotes primary contact

Inventors without a Blue Pages entry

Invention Development Team Information

Attorney/Patent professional	Arthur Samodovitz/Endicott/IBM
Invention development team (IDT)	Gerri Peper/Boulder/IBM Patrick Wong/San Jose/IBM Donald Schaefer/Boulder/IBM
Response due to IP&L	06/09/2003

Main Idea

Main Idea for Disclosure END8-2003-0065

Prepared for and/or by an IBM Attorney - IBM Confidential

Archived On 06/11/2003 01:30:27 AM

Title of disclosure (in English)
Remote power reset of AIX (UNIX) servers through network connection

Main Idea

1. Background: What is the problem solved by your invention? Describe known solutions to this problem (if any). What are the drawbacks of such known solutions, or why is an additional solution required? Cite any relevant technical documents or references.
It is applicable to UNIX servers. When server runs out of virtual memory because of applicaion memory consumption, server hangs. It is impossible to login into affected server. Only way to bring server back is to reboot via resetting power. It becomes a huge problem in case of remotely located servers.To reset power remotely, additional hardware required or server should have built in hardware features - like certain models of IBM pseries servers. In both cases installation of additional communication equipment required.

2. Summary of Invention: Briefly describe the core idea of your invention (saving the details for questions #3 below). Describe the advantage(s) of using your invention instead of the known solutions described above.
There is a way to perform remote power reset of hanged server through existing tcp/ip network connection. It doesn't require any additional hardware and compatible with wide range of unix servers . Power reset performs via software.

3. Description: Describe how your invention works, and how it could be implemented, using text, diagrams and flow charts as appropriate.
When server hangs as result of running out of virtual memory, operating system can't launch any new processes, but it is not completelly dead.
Server responds to tcp/ip ping. Existing processes, which don't require new system resources will work.
If there is a process, with very small memory requirements and pinned to memory, it survives. This process should listen to specific tcp/ip port.
When server hangs, it is possible to send specific tcp packet to hanged server from another server connected to the same network.
Described above process will receive this packet and performs system call in order to reboot or power off server.

Solution was tested on different models of IBM RS/6000 pseries servers running AIX V4.3/5.1 and proved it functionality.
There is a reason to believe that solution will work with other unix servers like linux

To view the Main Idea of this disclosure, open the "Main Idea" document from the view "Inventor Questions

* 1. Select the single most appropriate technology category for your invention from the following technologies list.
(674) Tech Tag 600 Software/Services/ Applications/Solutions-674 Other Software Access Comments
Are there any additional significant markets where the invention is likely to have impact?
○ Yes ● No
if yes, please identify them:

---

* 2. Have you implemented the invention (e.g., made a prototype) or otherwise shown that it is workable?
● Yes ○ No
If Yes, then what date

---

* 3. Has the subject matter of the invention or a product incorporating the invention been offered for sale, or is it likely to be offered for sale, as part of an IBM product or service?
● No known product plans within 2 years
○ Maybe; GA 1-2 years away
○ Yes; GA within 3-12 months
○ Yes; GA within 3 months
○ Yes; product has been announced

---

* 4. Has the invention been commercially used (internally or externally) by IBM or another entity (for example, included in or used to make products, or prototypes provided to a customer)?
● Yes ○ No
if Yes, please tell us the prototype/product, and when the use first started or is scheduled to start:
Prototype/Product
There are two programs - server part, which listens to requiest and performs power reset and client part - which sends requiest to reset power..
Date: March, 2003

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* 5. In what type of product might a competitor include the invention?
unix type operating systems
* What competitor(s) (indicate home country of such competitors if not United States)?
N/A

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* 6. How easily can the use of the invention by a third party be detected?
● Undiscoverable; third party must admit use for IBM to know
○ Difficult; e.g.; with reverse engineering or examination of available code
○ With work; e.g.; using test cases; but not reverse engineering
○ Easily; by running & viewing product operation
○ Trivally; without purchase of product; e.g.; by reading product literature

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* 7. Is the invention applicable to an Information Technology standard such as those likely to be developed by organizations such as the IETF, W3C, Oasis, ISO, IED or ITU?
○ Yes ● No
if Yes, what organization (if you know) and which standard?
and Is IBM participating in the development or usage of the standard? ○ Yes ○ No

To review the Information Technology standards IBM is participating in, go to
http://w3.ibm.com/standards

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* 8. Have you, or any of the other inventors, submitted this same invention disclosure or a similar invention disclosure previously?

○ Yes ● No
If Yes, please provide the disclosure number:

* 9. Please list the invention disclosures (previously submitted or about to be submitted), products, patents, or publications that you and the other inventors feel are the most relevant to your invention (for example, pertaining to the problem you are solving, including other solutions to the problem), be they from you or anyone else, or if not applicable, enter "None":
None

* 10. Was the invention made in the course of any activity that involved any other party, be it

• The government	○ Yes ○ No This invention disclosure has been verified to be covered by a government contract. If you feel changes are required to this information, contact the IP location handling this invention disclosure. If you check "Yes" for this question, you will be prompted to provide the following information • contract number • which country's government is issuing the contract • division holding the contract • government agency issuing the prime contract • government program (if known)
• A customer (such as RFQ, IGS engagement)	○ Yes ○ No if yes, describe the activity
• A non-IBM development partner (such as joint development activities)	○ Yes ○ No if yes, describe the activity
• As part of a standards setting activity	○ Yes ○ No if yes, describe the activity
• Other persons not employed by IBM	○ Yes ○ No if yes, describe the activity

If Yes is answered to any of the above, please provide information sufficient to identify the activity (e.g., government contract number, company name, project name, alliance name, name of other party, client services principal, technical coordinator, etc.)

* 11. Have you ever disclosed your invention to anyone outside IBM, or do you plan to do so in the future?
○ Yes ● No
If Yes, please tell us whether the disclosure was (or will be) made, how made (or to be made), and whether or not there was (or is) a confidential disclosure agreement (CDA) in place covering the disclosure:

* 12. Is your invention one which can be offered either directly as a service by IBM or our competitors or which could improve a service offering offered by IBM or our competitors?
○ Yes ○ No
If Yes, please explain your answer:

* 13. If the invention relates to a product or service that is outside the scope of your business unit, please

recommend IBM business unit(s), IBM location(s) or individual(s) within IBM that you think would provide a competent evaluation of your invention:

Final Evaluation Questions

A. Threshold Questions

1. Operability - Is implementation of the invention possible?
Yes
Reasons for above answer:

2. Novelty- Are one or more concept(s) of the invention novel over what is already known in the literature, existing commercial products, patents, and earlier IBM invention disclosures?
Yes
Reasons for above answer:

B. Valuation Questions

1. Adequacy of description:
Clear and complete as is
Reasons for answer:

2. Technical contribution of invention:
Minor addition to known technology
Reasons for above answer:

3. Describe the problem solved/benefit provided and the implementation cost of the invention compared to existing or reasonably expected alternatives:
Significant problem/substantial benefit - minor implementation cost

4. Are any alternatives to the invention available to those wishing to avoid its use?
Alternatives have drawbacks

5. Describe the likelihood of use of the invention (answer each):
IBM's customers? Probable
IBM's suppliers/vendors? Probable
IBM's competitors? Probable
IBM? Probable
Reasons for above answer:

6. What % of third party products in the technical field will likely contain the invention?
< 25%

7. How long is the invention likely to be used in products by IBM or others?
5-10 years

8. How easily can use of the invention by a third party be detected?
Trivially; without purchase of product; e.g.; by reading product literature
Reasons for the above answer, including description of how use could be detected:

Evaluation

This team evaluation was entered by Georgia Brundege/Endicott/IBM on 05/29/2003
What is the team's evaluation of this disclosure? Search
Date evaluated : 05/29/2003
Evaluation comments

Final Evaluation History	Who made the final evaluation	Final evaluation date
Search	Georgia Brundege/Endicott/IBM	5/29/2003

Search Information

Date sent: 05/30/2003 *Target completion date: 06/16/2003 Search results received date: 06/18/2003

Who was the search sent to (This area is to designate a Local Searcher name or WAIPL): WAIPL

*Search type: ☒ Patentability ☐ Clearance ☐ Validity ☐ State of Art

*Features to be searched: PLEASE SEND 2 COPIES OF SEARCH REPORT AND REFERENCES

Occasionally a server runs out of virtual memory and hangs. According to the prior art, the server can be rebooted manually, but this is time consuming. According to the present invention, there is a small program that continually runs (and has little memory requirements) and listens for a TCP/IP ping. When the server hangs, an operator at another, remote server sends the TCP/IP ping (including a data packet). The small program responds to the ping and data packet by automatically making a system call to reboot or power off the server.

Please see the Invention Disclosure for further details.

Search Office Information

Target completion date: 06/16/2003 ☐ Search has been delayed Ship/Return date: 06/17/2003

Search conducted by Bruniger

Comments

Final Decision

This decision was entered by Georgia Brundege/Endicott/IBM on 07/14/2003

Decision: File Status: N/A

PPM area: 600 - Software/Services/Applications/Solutions

Date of final decision : 07/08/2003

Additional filing information

Planned Filing date:

Filing comments:

Additional decision comments

Final Decision History

Entered on 14-Jul-2003 by Georgia Brundege
File N/A 8-Jul-2003 Docket Family: END920030054

Post Disclosure Text & Drawings

To add additional information related to this disclosure once it has been submitted, click the action button below and a new document will be opened for you to enter the new information. To view existing post disclosure information, double-click on the item in the list below (if there has been additional information entered), and the document will open for you to view.

Date entered Post disclosure comments and drawings (double-click an item below to view)

Form Revised (05/28/03)

```
/* 03/05/03 *this is source code in C programming language of
"pinned" program running on remote machine*/
/* by Slava Barsuk */
/* on demand power reset          */

#include <stdio.h> definition of miscellaneous C headers
#include <sys/types.h>
#include <sys/socket.h>
#include <sys/time.h>
#include <sys/select.h>
#include <sys/reboot.h>
#include <sys/sched.h>
#include <sys/lock.h>
#include <netinet/in.h>
#include <netdb.h>
#include <spc.h>
#include <strings.h>
#include <string.h>
#include <signal.h>


char cws_name[32]; defninition of data structures
struct    sockaddr_in    server;
int  sock,ws;

int  main_processing() body of subroutine to perfom power
operation, called from main body, when request comes on tcp
socket
{
static    struct    sockaddr_in    *pfrom; defninition of data
structures
static    struct    sockaddr  from;
static    struct    hostent        *hp;
static    struct
{ deninition of memory buffer for received request, consists of 3
elements - len, code and text
int  len;
int  code;
char text[24];

} buf;

static    int  addrlen,NB;

     addrlen=sizeof(from);
     pfrom=(struct sockaddr_in *)&from;
     NB=read(ws,&buf,sizeof(buf)); read request from tcp socket
ws into memory reffered as buf. NB receives number of actual
bytes read
```

```
     if(NB!=8 || buf.len!=4 ) return(-1); Check that number of
bytes read is 8 (NB==8) and len element is equal 4. If not,
return to main body and continute listening ( ignore request)

     if(getpeername(ws,&from,&addrlen)>=0) get tcp address of
request sender
       {
          hp=gethostbyaddr(&pfrom->sin_addr,4,AF_INET); resolve
tpc address of request sender into symbolic hostname
          if(hp==NULL) return(-1); return to main body, if unable
to resolve name
          if(strcmp(hp->h_name,cws_name)!=0) return(-1); compare
requester name with authorised hostname, if not, return to main
body (ignore request)
          if( buf.code==12 ) check message code. if 12, initiate
reboot operation
             {
                reboot(RB_SOFTIPL); system call to reboot
              }
             else if( buf.code==13 ) if message code is 13,
initiale power off (halt) operation
             {
                reboot(RB_HALT); system call to halt
             }
       }
}

void main(int argc,char *argv[]) main body
{

struct    servent *port,*getservbyname(); defninition of data
stuctures
int     l;

actual code starts here
     strncpy(cws_name,argv[1],30); accept authorized hostname as
parameter
     if(strlen(cws_name)<2) exit(6); check that authorized
hostname is not empty, exit program if name is not provided
     port=getservbyname("pwrport",0); if(port==0) exit(4);
resolve tpc communication port, exit program if  port can't be
resolved

     sock=socket(AF_INET, SOCK_STREAM,0); create and initialize
tcp socket structure for communication
     if (sock<0)  exit(5); exit program if socket can't be
created

     server.sin_family=AF_INET;
```

```
     server.sin_len=sizeof(server);
     server.sin_addr.s_addr=INADDR_ANY; set listener address
(any)
     server.sin_port=htons(port->s_port); set listener port
     l=sizeof(server);
     if (bind(sock,(struct sockaddr *)&server, l)) bind socket to
tcp port, exit if can't bind
                exit(7);

     if (getsockname(sock, (struct sockaddr *)&server, &l))
          exit(7); check that socket was created and binded
succesfuly
     plock(TXTLOCK); pin program to memory ( claim 1)

     listen(sock,10); start listening to requests on tcp socket
sock ( claim 1)

     do { start loop to wait and process requests (claim 1)
          ws=accept(sock,0,0); wait for request to come and
create communication socket ws for it, when it came (claim 1)
          main_processing(); peform request analysys and
processing ( subroutine main_processing, which does power
operation)
          close(ws); close socket
        }
     while(1); go to the beginning of the loop ( keep waiting for
new requests to come)

}
```